

# FR Food Web Model Help

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## Main Menu

### 1. Getting Started

[Purpose of this Database](#)

[Workflow of this Database](#)

[Glossary](#)

### 2. The Object Library

[Viewing Objects](#)

[Editing & Deleting Objects](#)

[Adding Objects](#)

### 3. Simulation Set Up

[Creating a Simulation](#)

[Editing a Simulation](#)

[Deleting a Simulation](#)

### 4. Getting Results

[Running a Simulation](#)

[Exporting Simulation Results](#)

### 5. Reports

[Report Descriptions](#)

[Preparing a Report](#)

### 6. Database Utilities

[Importing Text Data](#)

[Compacting the Database](#)





# FR Food Web Model Help

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## 1. Getting Started

### Purpose of This Database

#### Related Topics

[DB Workflow](#)

The purpose of the Fox River Food Web Model is to provide users with the means of using known values to predict bioaccumulation in organisms within the Fox River food web.

The Fox River Food Web Model is based on the mathematical model described in "A model for predicting the bioaccumulation of hydrophobic organic chemicals in aquatic food-webs: application to Lake Ontario" by F. Gobas (Ecol. Modelling 69:1-17, 1993).

This database can be used to create simulations using new or existing data, run existing simulations, export the results to MS Excel, and print a variety of reports.

The FR Food Web Model database application is written in Visual Basic for Applications (VBA) 5 and hosted in Microsoft Access 97. The application can be run on Windows 95/98/Me/2000 or NR 4 workstations. Recommended computer specifications are: Pentium 200 with 64 Mb of RAM. Minimum requirements are: Pentium 133 with 16 Mb of RAM.

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# FR Food Web Model Help

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## 1. Getting Started

### Workflow of This Database

#### Related Topics

[Editing Objects](#)

[Adding Objects](#)

[Creating  
Simulations](#)

[Editing  
Simulations](#)

[Running  
Simulations](#)

[Report Preparation](#)

This section provides an overview of the FR Food Web Model workflow. In general, users should follow the steps outlined below.

1. Establish or confirm objects (Organisms, Water, Sediment, Chemicals).
2. Set up a simulation (select or modify existing simulation, or create a new simulation).
3. Run the simulation. Once objects and simulations are established, the simulations can be run at any time.
4. View or print simulation-specific reports.



# FR Food Web Model Help

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## 1. Getting Started

### Simulation Glossary

#### Simulation

The Simulation is the identifier for a specific model run. A Simulation includes a System, a SubSystem, a Diet, and an Entry Set.

#### System

The System identifies which organisms are included in the Simulation.

#### SubSystem

The SubSystem is a collection of specific organisms (this allows the model to handle versions of the same organism that have specific properties -- see Object Library for more information) that are included in the Simulation. The SubSystem was included so that it could be manipulated separately from the Diet -- simply changing which sub-object is used does not require the user to modify the diet to include a particular sub-object. The Diet and the SubSystem both depend on the System, but are independent of each other. Note that the sediment and water sub-objects are required in the SubSystem so that specific instances of these objects can be changed for a given Simulation.

#### Diet

The Diet identifies the dietary intake for each member of the System.

## Entry Set

The Entry Set is a collection of known values from which predicted values are calculated. The Entry Set can contain known values for many chemicals in many objects for many different dates and/or locations (or other "tag"). The values chosen on the Simulation Set Up page for Chemical, Known Object1 and Known Object2 determine the Entry Set values that are used in a given Simulation. For example, if an Entry Set called "EntrySet1" contains both PCB and Dioxin values for sediment, a Simulation called "SimulationPCB" could use "EntrySet1," with the selected Chemical equal to "PCB." A different Simulation called "SimulationDioxin" could ALSO use "EntrySet1," but with the selected Chemical equal to "Dioxin."

The known values can be defined for any object (including organisms) as Known Object1. In the special cases where Known Object1 is Sediment, Total In Water, or Dissolved In Water, then the Known Object2 can also be defined, but it can not be an Organism.

If the Sediment and either Total In Water or Dissolved In Water are both included in the Entry Set, then the ratio of Sediment to Total In Water (defined in the Object Library) is NOT used. Rather, the actual (known) values override this ratio.

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# FR Food Web Model Help

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## 2. The Object Library

### Viewing Objects

#### Related Topics

[Editing Objects](#)

[Adding Objects](#)

#### Types of Objects

In the FR Food Web Model database, the specific Organisms, Water, Sediment and Chemicals are referred to as "objects."

Specific "versions" of each object (called "sub-objects") are available so that the user can specify different properties for a given object in various simulations, without overwriting values from previous simulations. This allows the user to return to previous simulations to re-run or review results.

#### Viewing Objects

All of the objects and their characteristics can be viewed and edited on the Object Library page. The Organisms, Water, Sediment, and Chemicals can be accessed separately by pressing the appropriate button on the Object Library page.

By default the object data is sorted ascending by the first column. To resort the data, click on any of the underlined column headings.

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# FR Food Web Model Help

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## 2. The Object Library

### Editing & Deleting Objects

#### Related Topics

[Viewing Objects](#)

[Adding Objects](#)

From the Object Library page, users can edit an object's specific characteristics and delete objects.

To edit an object's characteristics:

1. Locate the appropriate object and characteristic.
2. Place the cursor in the appropriate field and edit the data as necessary.
3. Press the Submit button located in the upper right area of the Object Library page to confirm changes, or press the Cancel button to cancel changes.

To delete an object:

1. Locate the appropriate object.
  2. Select the object's row by clicking on its record selector (it will turn a darker shade of gray when selected).
  3. Press the delete key on the keyboard. When prompted, confirm the delete.
  4. Press the Submit button located in the upper right area of the Object Library page to confirm changes, or press the Cancel button to cancel changes.
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# FR Food Web Model Help

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## 2. The Object Library

### Adding Objects

#### Related Topics

[Viewing Objects](#)

[Editing Objects](#)

Users can add new Organisms, Water, Sediment and Chemical objects on the Object Library page. The fields used for adding objects are located below the data grid.

To add a new object:

1. Select the type of object (Organisms, Water, Sediment, Chemical) by pressing the corresponding button on the Object Library page. This will display the objects that have already been entered.
2. Select the Object from the available pick list, or enter a new name.
3. Enter the name of the Specific Object.
4. Select a characteristic from the available pick list.
5. Press the "Add to Library" button. This adds the new data to the data grid.
6. Enter other Object characteristics (weight, temperature, TOC, etc.).
7. Press the "Submit" button in the upper right portion of the page.

#### Fields Used to Add Objects

Step 2      Step 3      Step 4      Step 5





# FR Food Web Model Help

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## 3. Simulation Set Up

### Creating a Simulation

#### Related Topics

[Editing a Simulation](#)

[Deleting a Simulation](#)

Simulations can be created two ways: by adopting an existing simulation and editing it according to new parameters; and by building a new scenario from scratch. Simulations are created from the Simulation Set Up page.

#### To Adopt an Existing Simulation:

1. Select the appropriate simulation from the pick list and press the "Go" button to the right of the Simulation field. This will make the other fields available.
2. Select the "Adopt" radio button.
3. At the prompt, enter the name of the new simulation.
4. Change as many of the System or Entry Set designations as necessary. To view or edit the details of a System or Entry Set designation, press the "Go" button directly to the right of the specific field. For more details refer to the "Editing a Simulation" help document.
5. Press the Submit button. This saves the new simulation scenario.

#### To Build a New Simulation:

1. Press the "Go" button to the right of the Simulation field. This will make the radio buttons available.
  2. Select the "New" radio button.
  3. At the prompt, enter the name of the new simulation. Notice that all System and Entry Set designations become reset to "Not Defined."
  4. Change the System or Entry Set designations as necessary. To view or edit the details of a System or Entry Set designation, press the "Go" button directly to the right of the specific field. For more details refer to the "Editing a Simulation" help document.
  5. Press the Submit button. This saves the new simulation scenario.
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# FR Food Web Model Help

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## 3. Simulation Set Up

### Editing a Simulation

#### Related Topics

[Creating a Simulation](#)

[Deleting a Simulation](#)

Existing simulations can be edited from the Simulation Set Up page. Once a simulation is selected, the radio button defaults to "Edit," and all changes to the System or Entry Set designations affect the design of the named simulation. To create a new simulation based on the selected simulation, select the "Adopt" radio button (refer to the "Creating a Simulation" help document for more details).

Each simulation has two main components: the System and the Entry Set. The System is composed of the SubSystem and the Diet. The Entry Set is composed of the Chemical, Known Object 1 and Known Object 2. To designate the characteristics of the System and Entry Set, use the picklists to select the appropriate parameters. If an appropriate parameter does not exist, create/adopt a new parameter or edit an existing parameter.

#### Creating/Adopting a New Parameter

Parameters can be created two ways: by adopting an existing parameter and editing it; and by building a new parameter from scratch.

1. Select a parameter from the pick list.
2. Press the "Go" button to the right of the field. This will open a form that displays the parameter's characteristics.
3. To adopt the parameter, click the "Adopt" radio button. To build a new parameter, click the "New" radio button.
4. At the prompt, enter the name of the new parameter.
5. Make changes, as necessary, to the parameter characteristics.
6. Press the "Submit" button. This will return you to the Simulation Set Up page.
7. If it becomes necessary to cancel the creation of a new parameter, press the "Cancel" button.

#### Editing an Existing Parameter:

1. Select the appropriate parameter from the pick list.
2. Press the "Go" button to the right of the field. This will open a form that displays the parameter's characteristics.
3. To edit the parameter, click the "Edit" radio button.
4. Make changes, as necessary, to the parameter characteristics.
5. Press the "Submit" button. This will return you to the Simulation Set Up page.
6. If it becomes necessary to cancel the edits, press the "Cancel" button.

### Deleting an Existing Parameter:

1. Select the appropriate parameter from the pick list.
  2. Press the "Go" button to the right of the field. This will open a form that displays the parameter's characteristics.
  3. Click the "Delete" radio button.
  4. Press the "Submit" button. This will return you to the Simulation Set Up page.
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# FR Food Web Model Help

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## 3. Simulation Set Up

### Editing a Simulation

#### Related Topics

[Creating a Simulation](#)

[Deleting a Simulation](#)

Existing simulations can be edited from the Simulation Set Up page. Once a simulation is selected, the radio button defaults to "Edit," and all changes to the System or Entry Set designations affect the design of the named simulation. To create a new simulation based on the selected simulation, select the "Adopt" radio button (refer to the "Creating a Simulation" help document for more details).

Each simulation has two main components: the System and the Entry Set. The System is composed of the SubSystem and the Diet. The Entry Set is composed of the Chemical, Known Object 1 and Known Object 2. To designate the characteristics of the System and Entry Set, use the picklists to select the appropriate parameters. If an appropriate parameter does not exist, create/adopt a new parameter or edit an existing parameter.

#### Creating/Adopting a New Parameter

Parameters can be created two ways: by adopting an existing parameter and editing it; and by building a new parameter from scratch.

1. Select a parameter from the pick list.
2. Press the "Go" button to the right of the field. This will open a form that displays the parameter's characteristics.
3. To adopt the parameter, click the "Adopt" radio button. To build a new parameter, click the "New" radio button.
4. At the prompt, enter the name of the new parameter.
5. Make changes, as necessary, to the parameter characteristics.
6. Press the "Submit" button. This will return you to the Simulation Set Up page.
7. If it becomes necessary to cancel the creation of a new parameter, press the "Cancel" button.

#### Editing an Existing Parameter:

1. Select the appropriate parameter from the pick list.
2. Press the "Go" button to the right of the field. This will open a form that displays the parameter's characteristics.
3. To edit the parameter, click the "Edit" radio button.
4. Make changes, as necessary, to the parameter characteristics.
5. Press the "Submit" button. This will return you to the Simulation Set Up page.
6. If it becomes necessary to cancel the edits, press the "Cancel" button.

### Deleting an Existing Parameter:

1. Select the appropriate parameter from the pick list.
  2. Press the "Go" button to the right of the field. This will open a form that displays the parameter's characteristics.
  3. Click the "Delete" radio button.
  4. Press the "Submit" button. This will return you to the Simulation Set Up page.
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# FR Food Web Model Help

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## 3. Simulation Set Up

### Deleting a Simulation

#### Related Topics

[Creating a Simulation](#)

[Editing a Simulation](#)

To Delete a Simulation:

1. From the Simulation Set Up page, select the appropriate simulation from the Simulation field pick list.
  2. Click on the "Go" button.
  3. Click on the "Delete" radio button.
  4. Press the "Submit" button.
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# FR Food Web Model Help

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## 4. Getting Results

### Running a Simulation

#### Related Topics

[Exporting Results](#)

#### Overview

Once a simulation has been created, it can be run from the Run/View Results page.

#### To Run a Simulation:

1. From the pick list provided, select a simulation. If the simulation has been run previously, the date and time it was last run will be displayed above the data grid.
  2. Press the "RUN" button. The database will run the simulation and display the results in the data grid. Note: depending on the complexity of the selected simulation, it may take several minutes to run the simulation.
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# FR Food Web Model Help

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## 4. Getting Results

### Exporting Simulation Results

#### Related Topics

[Running a Simulation](#)

#### Overview

Once a simulation has been set up and run, the results can be exported to MS Excel.

#### To Export to Excel:

1. From the Run/View Results page, select a simulation from the pick list field.
  2. Press the "RUN" button. The database will run the simulation and display the results in the data grid. Note: depending on the complexity of the selected simulation, it may take several minutes to run the simulation.
  3. Press the "Export to Excel" button.
  4. At the prompt, identify the location to save the file.
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# FR Food Web Model Help

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## 5. Reports

### Report Descriptions

#### Related Topics

[Preparing a Report](#)

#### Overview

The FR Food Web Model database contains six standard reports that can be prepared for any simulation. All reports are run from the Database Utilities page. For a description on running the reports, refer to the "Preparing a Report" help document.

Below is a description of the available reports.

#### Simulation Summary

This report displays the simulation set up designations in the outline format on the Simulation Set Up page.

#### System Members

This report displays the Objects and Sub-Objects that were included in the selected simulation's System and SubSystem.

#### System Members and Properties

This report builds on the System Members report by showing information such as lipid, weight, TOC in Sediment, Suspended Solids in Water, and Water Temperature values for system members.

#### Diet Data

This report displays the diets of system members (as defined in the selected simulation). The report identifies the prey and diet fractions for each system member.

#### Entry Set

This report first displays the Entry Set parameters (Chemical, Known Object1, and KnownObject2) for the selected simulation. The remainder of the report shows the Chemical Concentrations for the Known Object(s) and provides the Date and Location/Tag for each value.

#### Results

This report displays the results of the selected simulation as shown on the Run/View Results page. Values are provided for Location/Tag, Date, Object and Chemical Concentration.

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# FR Food Web Model Help

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## 5. Reports

### Preparing a Report

#### Related Topics

[Report](#)  
[Descriptions](#)

#### Overview

The FR Food Web Model database contains six standard reports that can be prepared for any simulation. All reports are run from the Database Utilities page. For a description of the reports, refer to the "Report Descriptions" help document.

#### To Prepare a Report:

1. Select a simulation from the pick list.
  2. Designate "View" or "Print" by clicking on the appropriate radio button. Selecting "View" will display the report in a print preview (from which the report can be printed). Selecting "Print" will send the report to the printer specified in the computer's default printer settings.
  3. Select a report by clicking on the appropriate button.
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# FR Food Web Model Help

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## 6. Database Utilities

### Importing Text Data

The import text feature was specifically designed to work with text files produced using the flow model. The import text feature is accessed from the Database Utilities page.

To import text data:

1. On the Database Utilities Page, press the "Import Text Data" button. This will open a message box that asks if the existing temporary table can be deleted. The temporary table is created when text is imported, but is not needed after a successful import is completed. To delete the contents, select "Yes." To review the contents of the temporary table, select "No."
2. After importing to the temporary table (by selecting "Yes" above), the Text Import form will open. This form contains four tabs, labeled Steps 1 through 4.

#### Step 1

1. To add text data to an existing Entry Set, select the appropriate name from the combo box. To import the text data to a new Entry Set, type the name of the new Entry Set in the combo box and save it when prompted.
2. To assign text values to an existing Location, select the appropriate Location from the combo box. To assign the text to a new Location, type the name of the new Location in the combo box and save it when prompted.

#### Step 2

The "Step 2" page displays the temporary table of the text data being imported. If one of the rows in this table contains column header information (i.e., not data to be imported), click on the checkbox next to that row.

#### Step 3

On the "Step 3" page, map the headings from the text to be imported to corresponding headings in the model. For example, if the heading from the import text is "Sediment PCB Concentration," it will likely be mapped to the object "Sediment," the property "Chemical Concentration," and the chemical "PCBs."

## Step 4

On the "Step 4" page, the import text is imported to the model one field at a time.

1. Select a field from the import text to be imported.
  2. Indicate a starting date.
  3. Indicate a multiplier for the values to be imported, if applicable.
  4. Click the "Import" button.
  5. Repeat the above steps for additional fields.
  6. When all fields have been imported, click the "Done" button.
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# FR Food Web Model Help

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## 6. Database Utilities

### Compacting the Database

As you change data in a database, the database file can become fragmented and use more disk space than necessary. To defragment the database, it should periodically be compacted. This will usually result in a smaller file that runs faster. Before compacting the database, save a backup copy of the database file in a separate location.

To defragment and compact the database:

From the Database Utilities page, press the Compact Database button. During compaction, the database will close. The compaction progress is charted in the status bar at the bottom left corner of the screen. When finished, the database will reopen. This process may take several minutes.

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